

AMENDMENTS TO THE SPECIFICATION

5 BRIEF SUMMARY OF THE INVENTION

Gas storage tank cooling after filling and the prediction of the future air supply from a cooling tank has been a problem without solution for divers in spite of the great expansion of SCUBA sport over the past forty years. The diver has no real use for the tank temperature. What he really needs is a method to provide an indication of what the supply of air will be from the warm tank supply after the tank has cooled. The diver knows his tank and it's capacity in terms of minutes of diving - if it is completely filled at the start of a dive with temperature-equilibrated air. The purpose method of this invention is ~~to tell~~ tells the ~~the diver what percentage ullage his fully pressured tank has as he leaves the fill station~~ change in pressure to expect when the tank temperature equilibrates. With this invention indicators on the tank surface that are actuated by the tank wall temperature do this. Change in color due to a particular temperature allows a particular ullage number to be seen. The ullage number is pre-calculated based on the common gas law of temperature effect on pressure at constant volume. Each ullage number is based on one hypothetical final gas temperature or a variety of patches segments can be used, each not only based on a given temperature immediately after filling, but also each based on an expected cooled equilibrated, final temperature.

DETAILED DESCRIPTION OF THE INVENTION (the ending paragraphs)

This ~~concept~~ method can be expanded beyond the example of Figure 1. Any number of columns in addition to 2, 3, and 4 for different temperatures can be used; any variety of combinations of pressure and temperature immediately after fill and of final equilibrium temperature can be used. In some cases for the temperature sensitive indicator a particular activation temperature might not be available. Then, the nearest one would be used and the proper ~~psi drop~~ pressure drop or ~~percentage drop~~ change would be calculated and imprinted on the given area.

Figure 2 illustrates the case of Figure 1 where the tank has a temperature of 110 degrees F. or higher. The numbers for 110 degrees have become visible, as have those for 95 degrees. To define the temperature more precisely there would have to be additional columns to register for temperatures between 110 degrees and 120 degrees.

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The invention is not limited to the particular cases seen in the figures. ~~In general, the use of~~
Any method using temperature sensitive materials applied to the surface of a gas storage tank to
indicate the effect of ~~cooling~~ temperature change of the tank on the pressure would be covered by
this invention.
